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(How) wrapping up the part of the frame members fitted in said mold in cast metal;  
wherein the part of the frame members fitted in said mold do not contact each  
other.

A marked-up version of the amended claims is enclosed as required by 37  
C.F.R. § 1.121.

**REMARKS**

The Office Action dated July 19, 2002 has been received and carefully noted. The following remarks are submitted as a full and complete response thereto. By this Amendment, claim 1 has been cancelled and the subject matter incorporated into claim 2. No new matter has been entered or amendments made that narrow the scope of any elements of any claim. Accordingly, claim 2 is pending in this application and is submitted for consideration.

The Abstract has been amended to conform to the requirements of 37 C.F.R. § 1.72(b).

Claims 1 and 2 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Applicants' admitted prior art (AAPA) in view of EP-0125735 (the Office Action inadvertently referred to this reference as EP-123,735) or FR-2159579. As stated above, claim 1 has been cancelled and the subject matter incorporated into claim 2. Therefore, the rejection with respect to claim 1 is moot.

In making this rejection, the Office Action took the position that AAPA discloses all the elements of the claimed invention, except that AAPA uses a welding technique instead of a molding technique to join the frame members. EP-125735 ('735) and FR-2519579 ('579) were cited for disclosing this limitation. However, Applicants

respectfully submit that claim 2 recites subject matter that is neither disclosed nor suggested in any combination of the prior art.

Claim 2 recites a method for joining frame members made of an aluminum alloy. The method includes fitting a part of the frame members into a mold, and wrapping up the part of the frame members fitted in the mold in cast metal. The part of the frame members fitted in the mold do not contact with each other.

The Office Action took the position that the prior art discloses all of the elements of the claimed invention. However, it is respectfully submitted that the prior art fails to disclose or suggest the structure of the claimed invention, and therefore, fails to provide the advantages of the present invention. For example, in the method for joining frame members of the present invention, frame members are fit in a mold and the part of the frame members that are fitted in the mold are wrapped up cast metal.

As a result of the claimed process, each of the frame members can be joined without forming the intricate configuration on an end part of the frame members, and without using a joining member. Consequently, the frame members are joined without a welding procedure and the manufacturing process is thus simplified. Each of the frame members is joined with superior positional precision without using a specific joining part, because each of the frame members is joined by wrapping up the connecting part in cast metal. Moreover, if an irregularity of the shape occurs at the end part of the frame members when casting, the irregularity of the shape can be absorbed within a mold.

In the present invention, as shown in Figs. 2A and 2B, tip parts of each frame member are not in contact with each other in the mold. When the molten metal is poured into the mold, since aluminum material is easily deformed with heat, the

deformation of the aluminum may be increased by the heat of molten metal. Thus, if a deformation, such as expansion and contraction, of the frame member arises, since each frame member does not contact with the other, and the space for allowing the deformation is provided in the mold, the affect of the deformation is absorbed in the mold.

EP-125735 discloses a method of manufacturing a bicycle frame. The method includes the steps of permanently joining the ends of at least two already finished metal tubes of the bicycle frame, placing the ends of the tubes in the correct relative positions in an injection mold, closing the mold around the ends of the tubes and filling the mold with liquid plastic material. After the plastic material has set, the ends of the tubes are joined together by plastic lugs. Before the mold is filled with the plastic material, a fitting metal insert is applied onto which the tube ends are pushed with a close fit. The metal insert serves to transmit forces between tubes in the front wheel of the bicycle.

FR-2519579 discloses heat exchanger plates made by assembling polymer modules which are placed in a mold filled with polymer to join the modules together. According to the Abstract, adjacent ends of two modules are placed into a mold and the mold is heated while a liquid is injected into the mold to join the modules together.

The Office Action took the position that both EP-125735 and FR-2519579 disclose placing frame members inside a mold cavity and then injecting molten material around the frame members to join the same. The Office Action asserted that this molding technique forms a stronger joint because the molding material provides a greater joining area.

However, upon review of both EP-125735 and FR-2519579, it is unclear as to where this is taught in either reference. The rationale for combining the references must either be asserted as known in the art, or it must be shown that it is taught in the prior art. The Office Action has shown neither of these. Furthermore, In EP-125735, each tip part of the frame members is in contact with another frame member. Thus, the deformation of the frame is not absorbed in the mold. However, in the present invention, this problem does not occur because each frame member is placed in the mold with adequate space inbetween.

Therefore, as discussed above, Applicants submit that EP-125735 and FR-2519579, either alone or in combination, fail to disclose or suggest a method for joining frame members made of aluminum alloy including fitting a part of the frame members into a mold, and wrapping up the part of the frame members fitted in said mold in cast metal; wherein the part of the frame members protruded in said mold do not contact with each other, as recited in claim 2.

Thus, it is respectfully submitted that the Applicants' invention, as set forth in claim 2, is not obvious within the meaning of 35 U.S.C. § 103.

In view of the foregoing, reconsideration of the application, withdrawal of the outstanding rejections, allowance of claim 2, and the prompt issuance of a Notice of Allowability are respectfully solicited.

If this application is not in condition for allowance, the Examiner is requested to contact the undersigned at the telephone listed below.

In the event this paper is not considered to be timely filed, the Applicants respectfully petition for an appropriate extension of time. Any fees for such an

extension, together with any additional fees that may be due with respect to this paper, may be charged to counsel's Deposit Account No. 01-2300, **referencing docket number 106145-00021.**

Respectfully submitted,  
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Enclosures: Marked-up Version of Claim  
Marked-up Copy of the Abstract  
Substitute Abstract  
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**MARKED-UP VERSION OF CLAIM**

Please cancel claim 1 without prejudice.

Please amend claim 2 as follows:

2. (Amended) A method for joining frame members [according to claim 1, wherein each frame member is] made of aluminum alloy[.] comprising the steps of:  
fitting a part of the frame members into a mold; and  
wrapping up the part of the frame members fitted in said mold in cast metal;  
wherein the part of the frame members fitted in said mold do not contact each  
other.

MARKED-UP VERSION OF ABSTRACT

[A method for joining frame members, wherein frame] Frame members are joined in a mold without forming the intricate configuration on the end part of the frame members, and without using [the] joining members. [In this method, first, fit the] A sash [2] is fit into [the] a first fitting groove [11], which is formed on the mold [6]. [next, fit the] A side frame [3] is fit into [the] a second fitting [grooves 12] groove, and [further fit the] a vertical frame [4] is fit into [the] a third fitting [grooves 13] groove. Consequently, the sash [2], the side frame [3] and the vertical frame [4] are arranged [to] in the mold [6]. After fitting the sash [2], the side frame [3] and the vertical frame [4] into the grooves [11, 12 and 13, respectively.], [Pour the] molten metal is poured into the mold [6] until the sash [2], the side frame [3] and the vertical frame [4] are completely covered with the molten metal. [And after] After the molten metal is poured into the mold [6], [cooling the molten metal in] it is cooled for a predetermined time[. And after the molten metal] and is removed from the mold after becoming [becomes] hardened [remove the mold 6]. Consequently, [the casted joining member 5 is obtained wherein] each end [pert] part of the sash [2], the side frame [3] and the vertical frame [4] are joined by being wrapped up in cast metal.